

** The research was supported by the President of the Russian Federation Grant for young scientists MK-1219.2020.3; by Russian Foundation for Basic Research and the government of the Novosibirsk region of the Russian Federation, grant № 18–43–540016 r_a.*

УДК 632.959

**V. Y. Vaganov¹, Y. Fukazawa², S. A. Shipilovskikh¹,
A. E. Rubtsov¹, A. V. Malkov²**

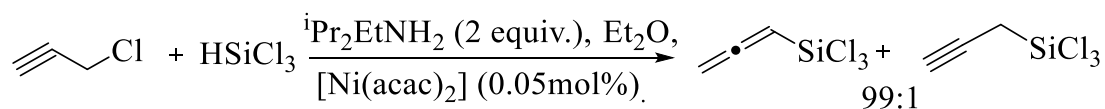
¹Perm State University,
614990, Russia, Perm, Bukireva St., 15,
vaganov@psu.ru,

²Loughborough University,
LE11 3TU, U. K., Loughborough,

ENANTIOSELECTIVE PROPARGYLATION OF ALDEHYDES CATALYZED BY NEW CHIRAL LEWIS BASES*

Keywords: Lewis base catalysis, enantioselective catalysis, allenyltrichlorosilane, homopropargylic alcohols.

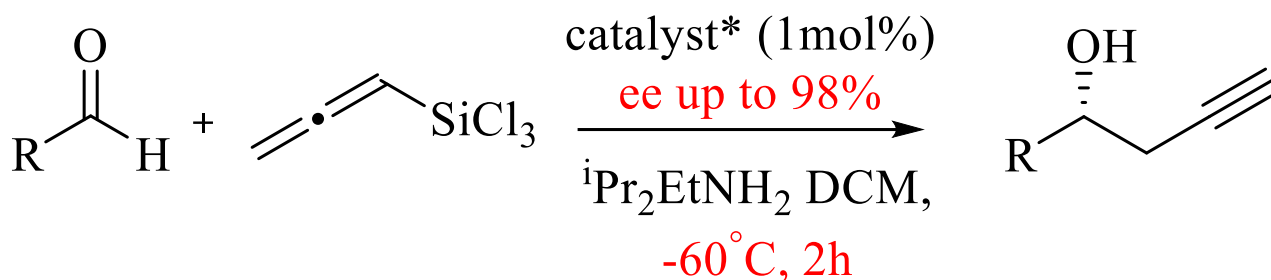
Optically active homopropargylic alcohols are rare type of organic compounds due to the synthetic potential of acetylene group. They can be highly functional building blocks which found an application in the total synthesis of some biologically active compounds [1]. But the direct catalytic synthesis of this class of compounds appears to be challenging. Nowadays several methods of enantioselective propargylation have been developed. Some of these methods include using highly toxic reagents, such as tin compounds, some protocols requires an expensive reagents such as propargyl borolane. At this point using an allenylsilane as the propargylation agent is the most promising.



S. Kobayashi et.al. Tetrahedron, 2006. 62(2-3): p. 496-502.

However, the development of catalysts for asymmetric propargylations using allenyltrichlorosilanes has proved much more challenging [2]. To our knowledge there are only two examples of using this reagent in asymmetric catalysis [2, 3].

In this work we've designed a series of new chiral Lewis Bases and show their excellent catalytic ability in the reaction of asymmetric propargylation of aromatic and α -unsaturated aldehydes.



* Structure of catalysts, their synthesis, optimization of reaction conditions and possible mechanisms will be discussed.

References

1. Trost B. M., Dong G. // *Nature*. 2008. Vol. 456. P. 485–488.
2. Nakajima M., Saito M., Hashimoto S. // *Tetrahedron Asymmetry*. 2002. Vol. 13, № 22. P. 2449–2452.
3. Chen J., Captain B., Takenaka N. // *Organic Letters*. 2011. Vol. 13, № 7. P. 1654–1657.
4. Trost B. M., Dong G. // *Nature*. 2008. Vol. 456. P. 485–488.
5. Nakajima M., Saito M., Hashimoto S. // *Tetrahedron Asymmetry*. 2002. Vol. 13, № 22. P. 2449–2452.
6. Chen J., Captain B., Takenaka N. // *Organic Letters*. 2011. Vol. 13, № 7. P. 1654–1657.

* *The authors thank the Russian Science Foundation for Grant 18-73-10156.*